

The non-executive director's guide to NHS data

Part one: Hospital activity, data sets and performance

Key points

- As a non-executive director, it is important to understand how data can be used to inform improvement and ensure colleagues are focusing their effort in the right areas.
- To deliver new models of care, NHS organisations need to get to the heart of their data, explore what they know about their trust and indeed their neighbouring organisations.
- New care models are reliant on data sharing to ensure more efficient care through integrated teams taking in both primary and secondary care.
- Sharing information between departments and organisations also helps to drive down variation between services, which can both cut costs and improve efficiency and patient experience.

Introduction

Data is the lynchpin of health and social care transformation. As the system moves towards new ways of delivering care, data will be more important than ever in helping to stratify populations, manage demand and tear down the barriers to integrated care.

Next Steps on the Five Year Forward View noted that the ability to collect, aggregate and analyse data generated by the NHS is not only critical to delivering the triple aims of healthcare – improved health and wellbeing, transformed quality of care, and sustainable finances – but also underpins the NHS and wider life sciences research strategies.

As a non-executive director (NED), understanding your organisation's data is an essential part of providing effective oversight and driving improvement. This guide will help you to better understand NHS data and how it can be used to determine what is happening in your organisation. It is the first in a series of briefings unpacking data across the healthcare system.

This first instalment, aimed at NEDs in the acute care sector, examines activity in both primary and secondary care settings and considers the role of data sharing in bringing about efficiency savings. It also explores the latest developments in information governance.

An introduction to data in the NHS

Analysis of activity

In England, there are more than 90 million outpatient attendances and 16 million hospital admissions a year. Recent analysis of the total volume of hospital admissions by CHKS reveals that 1.6 million of these relate to maternity services and babies, 9.2 million are elective admissions and 5.3 million emergency admissions.

Examination of the admissions data reveals that the proportion of the population admitted to hospital increases with age; nearly two-thirds of patients admitted to hospital are over the age of 65 and the likelihood of admission is greater for older people.

Around 90 per cent of patient interaction takes place in the community.

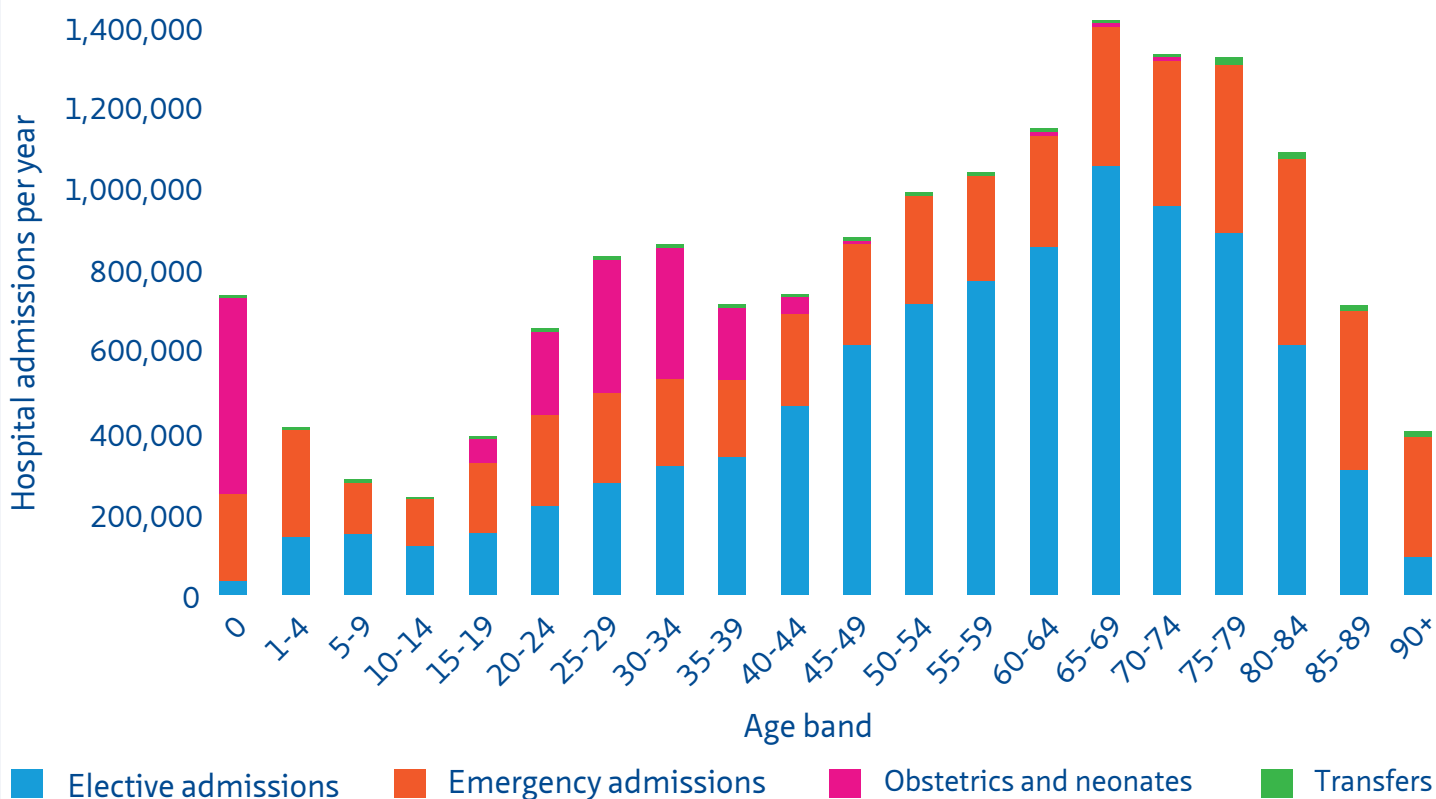
This activity generates a large volume of population-based data every day, including:

- information on symptoms
- investigations
- diagnoses and referrals
- treatment and outcomes.

Data collected can help research, education, audit, quality management, service development and planning.

GPs and other primary care providers arrange secondary care referrals. The data they hold (very often from birth) offers a unique opportunity to plan and monitor health services and the quality of care.

Figure 1. Admissions to English hospitals



Source: Hospital Episode Statistics 2013 to 2015 (averaged per year over the three years)

Coding and data sets

Secondary care

An extensive range of services are delivered in secondary care, which can be differentiated in five ways:

- by the stage on the patient's pathway – outpatient, diagnostics, daycase or inpatient
- by speciality, based on the age of the patient – for example, birth (obstetrics), childhood, (paediatrics) and care of the elderly (geriatrics)
- by specialty, based on the part of the body that has the problem – this is then further categorised as a surgical or medical (nonsurgical) case
- by treatment provided by other health professionals – for example, physiotherapy, speech therapy, dietetics
- by disease, and the treatment given.

Other services which support this clinical work include:

- 'hotel services', providing food, cleaning and portering
- technical support, such as medical physics, maintenance of diagnostic and treatment equipment, and IT departments
- estates (or building) services, looking after the provision of power and water, building maintenance and heating
- administration, the management of patient appointments, which includes recording data about a patient's hospital contact, coding their treatment into agreed classifications, and the distribution of letters to GPs.

New care models are reliant on data sharing to ensure more efficient care through integrated teams taking in both primary and secondary care.

Sharing information between departments and organisations also helps to drive down variation between services, which can both cut costs and improve efficiency and patient experience.

Data sets used in today's NHS

The data recording system in use in hospitals today was set up prior to the introduction of payment by results (PbR). Although data that underpins hospital income (as defined by PbR) has become a business-critical issue, the way that clinical information is recorded has not changed.

At present, three major data sets are recorded in a hospital:

- data for outpatients
- data specific to A&E
- data for admitted patients.

These three data sets have a certain amount in common – all record personal information, basic administrative details and some clinical information. The administrative details will include the patient's personal information and the date of contact with the hospital.

This data is captured in a patient administration system (PAS) which contains the three unlinked data sets.

The information in the PAS is published centrally (in a patient anonymised form) by NHS Digital (formerly the Health and Social Care Information Centre) as the Hospital Episode Statistics (HES) database.

For outpatients and A&E cases, limited clinical data is recorded at the time of the event. For admitted patient care, clinical information is usually recorded by a team of individuals known as clinical coders.

Clinical coders interpret the information recorded by clinicians and convert this into a set of codes. There are two sets of information that are recorded by coders: diagnoses and procedures. The majority of hospital activity is recorded using the PAS, and nationally and internationally accepted classification systems are used when recording activity. Clinical coding standards are, however, variable across the NHS.

Data recording is vital to be able to compare and improve services and patient safety, but some patients and clinicians are still cautious about how information is stored and who it is shared with, which is leading to a delay in setting up the most efficient systems.

The third Caldicott report¹, written by national data guardian Fiona Caldicott, recommended that a patient may opt out of sharing their data and can also withdraw their opt out of information about them being shared outside of NHS Digital for purposes beyond direct care. The government accepted this recommendation in July 2017.

As of April 2016, out of 56 million patients, 2.2 per cent had opted out of sharing their data. Caldicott said research had found considerable public support for the use of patients' anonymised information, despite low levels of understanding about data use and sharing.

She urged boards and leaders to assure the public over compliance with data security standards and to ensure these standards were discussed with the same level of importance as they would regularly discuss finance and quality standards.

Using data to track patient care and performance

As a non-executive director, it is important to understand how data can be used as a starting point to inform improvement and ensure colleagues are focusing their effort in the right areas.

This means looking at the way data is collected, shared and analysed. Data is often presented in the form of reports about the past and present performance of

the business. **Descriptive analytics** is analytics at its most basic – essentially what we see from data. This function is most useful for managing administration, existing operations and performance reporting.

Predictive analytics moves this basis forward – from what we see, to what we predict from data. It helps organisations plan for the future and design their processes better to meet their needs. Prescriptive analytics is, essentially, what we do with data, helping to organise the physical operation of an organisation. In healthcare organisations, for example, it influences treatment delivery, including adoption of new models of care.

To deliver new models of care, NHS organisations need to get to the heart of their data, to explore what they know about their trust, and indeed their neighbouring organisations. And they will need to ensure it is captured accurately and stored by the right tools that allow data to be interrogated and searched. This allows them to construct a tomorrow that is fit for the purposes of the local population.

Building specialist systems for healthcare is not a one-person task; it requires teams with diverse experience. Getting the most out of analytics requires a dynamic and broad-based approach, addressing more than just technology, as it needs to connect software outputs directly to a myriad of front line user needs.

Analytics cannot solely concern where money has been spent, and must not just be backward looking. It is about actively changing the path of an organisation, or organisations, by applying tools and software to help them deliver the most cost-effective high-quality care – consistently.

“Analytics cannot solely concern where money has been spent, and must not just be backward looking. It is about actively changing the path of an organisation.”

1. National Data Guardian (2016), *Review of Data Security, Consent and Opt-Outs*

Outpatients

Who records data?

All three datasets (outpatients, A&E data and data for admitted patients), personal details and some of the administrative data – such as date of attendance and admission – are normally recorded by an administrative assistant such as an outpatient or ward clerk. It is the responsibility of all staff interacting with the patient to ensure the recorded data is correct. There are many occasions when a patient will be seen by staff in the absence of nurses.

Sharing data

Every time a patient uses an NHS service, a record is kept and therefore information can be held in many different places. The result is that sharing information can be a slow process.

Summary care records (SCRs) are now used to help speed up sharing of such information. As well as basic personal data, such as name and address, date of birth and unique NHS number, SCRs contain information about medicines being taken, allergies and bad reactions a patient may have had to certain medicines.

Patients can also choose to add any information they feel will benefit their care. Some clinical commissioning groups are now choosing to integrate medical and social care records.

Outpatient activity is the most routine patient pathway. An outpatient appointment can be categorised as a 'new' visit – the first time that a patient has been seen by a particular specialty for a given episode of illness – or a follow-up appointment.

Outpatient activity is recorded through the PAS. For acute trusts, the number of attendances is important because this is the basis on which activity is paid for by the commissioner. In any given trust there can be up to 100 different specialities that offer outpatient clinics. The routine data items recorded for outpatients include patient details such as name, date of birth and the GP with whom the patient is registered.

The patient's NHS number will also be recorded, as this is the key index for all systems. The speciality to which the referral was sent is recorded, but presenting problems are not. The number of patients that do not attend appointments (DNAs) is also noted, as well as any cancellations or appointments that have to be re-booked.

Once a patient has been seen, the outcome is recorded from a number of options, which include whether the patient was discharged, given a further appointment or added to the waiting list for a procedure. If a patient is asked to come back, the next appointment is counted as a follow-up. There are often restrictions on the ratio of new-to-follow-up patients because commissioners want to discourage hospitals 'holding onto' patients.

Outpatient procedures have their own tariff; payments associated with outpatient tariffs are generally lower as procedures are generally less complex.

Other things to consider

Outpatient appointments are generally led by a consultant. The consultant may want diagnostic tests carried out and will ask a patient to re-attend as a follow-up for a discussion of the test results. This further appointment used to be a common cause of delay. However, more clinics are being set up as 'one-stop' services where diagnostics are provided during the first appointment.

NHS e-referral system

How the e-referral system works

The NHS e-Referral Service combines electronic booking with a choice of place, date and time for first hospital or clinic appointments. Patients can choose their initial hospital or clinic appointment, book it in the GP surgery at the point of referral, or later at home by phone or online.

The e-referral system was introduced in a bid to eradicate the paper-booking system and help create a paper-free NHS. The system is a secure and free NHS booking service which allows patients to book the hospital or clinic of their choice or at a time that suits them. The patient's GP will shortlist a number of suitable trusts for the patient to choose from.

Patients can book, change or cancel appointments online, by phone, or at their GP surgery. If a patient decides to book online or by phone, the GP surgery will give the patient an appointment request letter. This letter includes the patient's unique booking reference number and password. It will also have the patient's NHS number and a list of hospitals or clinics to choose from.

The NHS e-Referral Service will then provide the patient with information about appointment dates and times available from the shortlisted healthcare providers, allowing them to make a decision that is most suitable.

The process is intended to be more efficient – for example, there will be less time spent chasing incorrectly written paper referrals. The service also has built in search tools which allows the correct service to be selected. The increased visibility of available services supports more appropriate care closer to home. It also informs the referrer of new services as they become available.

This gives the patient clear instructions on how they can book their appointment later, either by phone or via the internet. When an appointment is booked for a service with no appointment slots available, the referral is placed on an appointment slot issues (ASI) worklist, which is managed by the trust.

Demand management

Demand for services can be effectively managed through the use of the NHS e-Referral Service (e-RS). Providers are able to offer the number of slots they know they will have available. Usually, if an appointment is not available through e-RS, this is because organisations providing directly bookable services have not made sufficient slots available to e-RS.

Appointment slot issues need to be managed properly by the provider to ensure patient safety. Trusts are encouraged not to keep slots availability artificially low as this only creates waiting lists if patients cannot book through the e-RS system.

Allowing the patient to book directly has many benefits, including immediate access to referral information, automatic registration on the providers PAS list. They will also appear on the provider's patient tracking list highlighting referral-to-treatment pressures.

Using data and information contained within the e-RS is fundamental for commissioners and providers to be able to manage ASIs effectively.

A brief technical guide: ICD10, OPCS4 & HRGs

Patient diagnoses are recorded using International Classification of Diseases (ICD) codes – also known as ICD-10 – and procedures are recorded using operating procedure code supplement (OPCS) codes.

While ICD and OPCS codes are the universally mandated classification systems used in the UK, these codes are not always universally applied in the same way: hospitals adopt slightly different approaches to the way an admission type is recorded, including whether or not to include information details such as whether an admission is via a GP.

Similarly, a patient who regularly attends for renal dialysis, chemotherapy or radiotherapy may have their treatment recorded differently depending on which hospital they attend.

Healthcare resource groups (HRGs) are groupings of clinical similar treatments which use common levels

of healthcare resource. They enable the comparison of healthcare between organisations and also offer benchmarking opportunities, as well as being a consistent use of 'currency' – providing a means of determining a fair and equitable reimbursement for care services offered by providers.

Clinical Classification Software (CCS)

CCS provides a way to classify diagnoses into 259 clinically meaningful and mutually exclusive categories. It does this by aggregating individual ICD-10 codes into broad diagnosis groups, such as tuberculosis, acute myocardial infarction. This 'clinical grouper' makes it easier to understand patterns of diagnoses and outcomes associated with particular illnesses and diseases.

Using CCS groups enables trusts to analyse their performance and outcomes, both internally and with other organisations, to identify areas of good practice and those that require improvement.

Key questions for NEDs to ask

- How often does your trust cancel and re-arrange appointments?
- What is the rate of cancellation by specialty?
- What is your policy for DNAs – is this appropriate for your population?
- How many coders does your trust have and are they qualified?
- Is your trust able to consistently recruit qualified coders?
- What internal auditing is done on the accuracy of coding?
- How aware are doctors within your trust of the importance of the source documents to accurate coding?

The non-executive director's guide to NHS data

This briefing is the first in a series developed to increase non-executive directors' understanding of NHS data and its role in transforming care. All briefings will be available from the NHS Confederation and CHKS websites.

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